

**IN THE CLAIMS:**

**1. (original)** A method of registering an IP (Internet Protocol) terminal device including a function to transmit and receive IP packets, to a line-switching exchanger including a database that is used for managing a type of a telephone set and a telephone number thereof, said method comprising the steps of:

connecting said line-switching exchanger and a network-gateway device by use of a radio-base-station-connection line that is used for connecting radio base stations;

connecting said network-gateway device and said IP terminal device through an IP network; and

registering said IP terminal device as a radiotelephony device in said database.

**2. (original)** The method as claimed in claim 1, further comprising the steps of:

transmitting location-registration information of said IP terminal device used for registering information about a location of said IP terminal device to said line switching exchanger through said network-gateway device; and

registering location information about said IP terminal device in said database based on the location-registration information of said IP terminal device.

**3. (original)** A line-switching exchanger provided in an IP-terminal-device-registration system, wherein said line-switching exchanger is connected with a network-gateway device through a radio-base-station-connection line used for connecting radio base stations, said network-gateway device being connected through an IP network to an IP terminal device that includes a function to transmit and receive IP packets, said line-

switching exchanger comprising a database used for managing a type and a telephone number of a telephone set, wherein said line-switching exchanger registers the IP terminal device as a radiotelephony device in said database.

**4. (original)** The line-switching exchanger as claimed in claim 3, wherein said line-switching exchanger registers information about a location of said IP terminal device based on a location-registration-request message supplied from said network-gateway device.

**5. (original)** The line-switching exchanger as claimed in claim 3, wherein said database initially includes an authentication code for each IP terminal device connected to said line-switching exchanger, said line-switching exchanger comprising an IP-terminal-authentication unit executing authentication of said IP terminal device after receiving a location-registration-request message requesting registration of said IP terminal device to the database from said network-gateway device, by using an authentication code of said IP terminal device corresponding to the location-registration-request message.

**6. (original)** The line-switching exchanger as claimed in claim 3, wherein said line-switching exchanger is a PBX (Private Branch exchange) device.

**7. (withdrawn)** A network-gatekeeper device provided in an IP-terminal-device-registration system, wherein a line-switching exchanger is connected with a network-

gateway device through a radio-base-station-connection line used for connecting radio base stations, and said network-gatekeeper device is connected through an IP network to said network-gateway device and an IP terminal device that includes a function to transmit and receive IP packets, said network-gatekeeper device comprising:

a location-registration-request unit receiving a telephone number and an IP address of said IP terminal device included in an IP-terminal-location-registration-request message that is used for requesting registration of said IP terminal device from said IP terminal device, and transmitting a location-registration-request message that includes the telephone number to said network-gateway device; and

a registration-result-notification unit receiving a result of registering said IP terminal device to said line-switching exchanger from the network-gateway device, and transmitting the result to said IP terminal device.

**8. (withdrawn)** The network-gatekeeper device as claimed in claim 7, wherein said location-registration-request unit receives the IP-terminal-location-registration-request message including an authentication code from said IP terminal device, and transmits the location-registration-request message including said authentication code to said network-gateway device.

**9. (withdrawn)** The network-gatekeeper device as claimed in claim 7, wherein said location-registration-request unit generates an authentication code based on address information of said IP terminal device when receiving the IP-terminal-location-registration-request message that does not include the authentication code from said IP

terminal device, and transmits the location-registration-request message including the generated authentication code to said network-gateway device.

**10. (withdrawn)** A network-gateway device provided in an IP-terminal-device-registration system, wherein a line-switching exchanger is connected with said network-gateway device through a radio-base-station-connection line used for connecting radio base stations, and a network-gatekeeper device is connected through an IP network to said network-gateway device and an IP terminal device that includes a function to transmit and receive IP packets, said network-gateway device comprising:

a location-registration-request unit receiving a first location-registration-request message that includes a telephone number of said IP terminal device connected to the IP network from said network-gatekeeper device, and transmitting a second location-registration-request message including said telephone number to said line-switching exchanger; and

a registration-result-notification unit receiving a result of location registration of said IP terminal device from said line-switching exchanger, and transmitting the result to said network-gatekeeper device.

**11. (withdrawn)** The network-gateway device as claimed in claim 10 comprising a memory temporarily storing an authentication code of said IP terminal device when the first location-registration-request message received from said network-gatekeeper device includes the authentication code of said IP terminal device.

**12. (withdrawn)** The network-gateway device as claimed in claim 11 comprising a gateway-arithmetic-operation unit executing an arithmetic operation using the authentication code temporarily stored in said memory and an authentication random number after receiving the authentication random number from said line-switching exchanger, and transmitting a result of the arithmetic operation to said line-switching exchanger.

**13. (withdrawn)** An IP terminal device provided in an IP-terminal-device-registration system wherein a line-switching exchanger is connected with a network-gateway device through a radio-base-station-connection line used for connecting radio base stations, and a network-gatekeeper device is connected through an IP network to said network-gateway device and said IP terminal device that includes a function to transmit and receive IP packets, said IP terminal device comprising:

a memory storing an authentication code; and

an IP-terminal-location-registration-request unit transmitting an IP-terminal-location-registration-request message including the authentication code therein to said network-gatekeeper device.

**14. (new)** The method as claimed in claim 1, wherein the registering step includes the steps of:

storing an authentication code in a memory of said IP terminal device; and

transmitting an IP-terminal-location-registration-request message by an IP-terminal-location-registration-request unit of said IP terminal device, said IP-terminal-

location-registration-request message including the authentication code therein to said network-gatekeeper device.